Project acronym: BITCue

Project title: Biotic interactions tracked by computer vision

Project leader: Toke Høye, Aarhus University, Denmark

Discipline: Earth Sciences & Environment: Ecosystems & Biodiversity

Station(s): UK Arctic Research Station (NERC Arctic Station) (Svalbard/UK), Arctic Station (Greenland/Denmark), Toolik Field Station (USA), Rif Field Station (Iceland)

BITCue aims to test if interactions among plants and pollinators are sensitive to local and large-scale climatic variation, and to quantify the consequences for plant reproduction. We pursue this aim by using cutting-edge technology and climate change experiments. We will quantify flower visitation rates at a uniquely high temporal resolution across the growing season using a large number of time-lapse cameras, computer vision and machine learning. We will focus on a widespread, insect pollinated plant species and its flower visitors across ten tundra sites (five included in this proposal and five supported by existing funding) covering contrasting climate conditions. The detailed quantification of biotic interactions in BITCue will be used to identify the most important climatic factors for flower visitation rates and pollination. BITCue will pioneer phenological studies at the level of individual flowers and we expect the project to pave the way for using camera traps on invertebrate species such as insects and for tracking biotic interactions.